

Scatter Graphs and Correlation

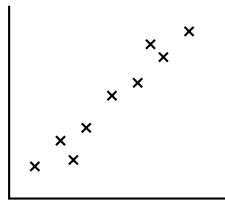
For Pearson Edexcel GCSE Mathematics (1MA1) • Foundation tier

Name _____

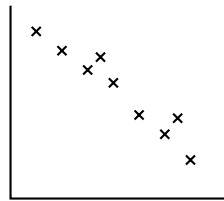
Total marks: **23**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method.

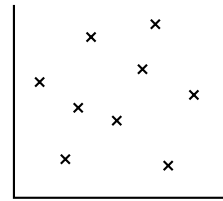
1 Here are three scatter graphs.



A



B



C

Write down the letter of the graph that shows

(a) negative correlation

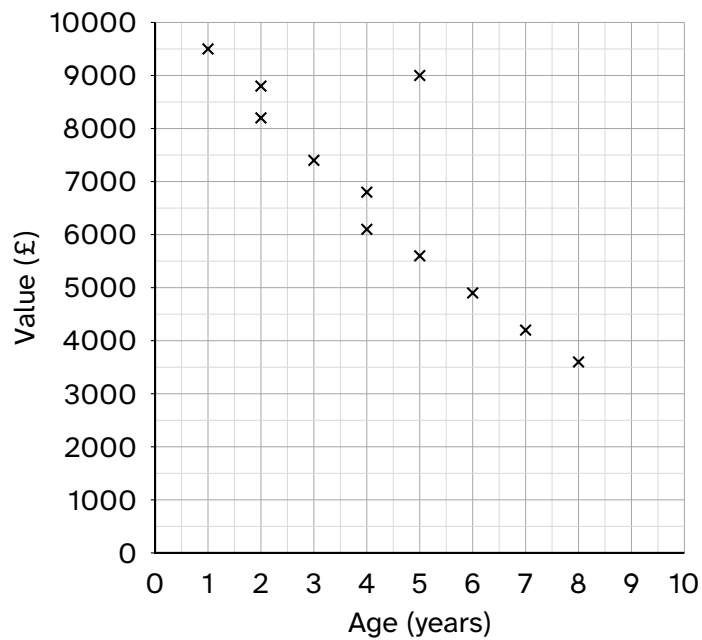
.....
(1)

(b) no correlation

.....
(1)

(Total for Question 1 is 2 marks)

- 2 The scatter graph shows information about the age and the value of some cars of the same model.



- (a) Describe the relationship between the age of a car and its value.

(1)

- (b) One of the points is an outlier.
Write down the age and value of this car.

.....

(1)

- (c) A car of this model is 3.5 years old.
Estimate its value.

£

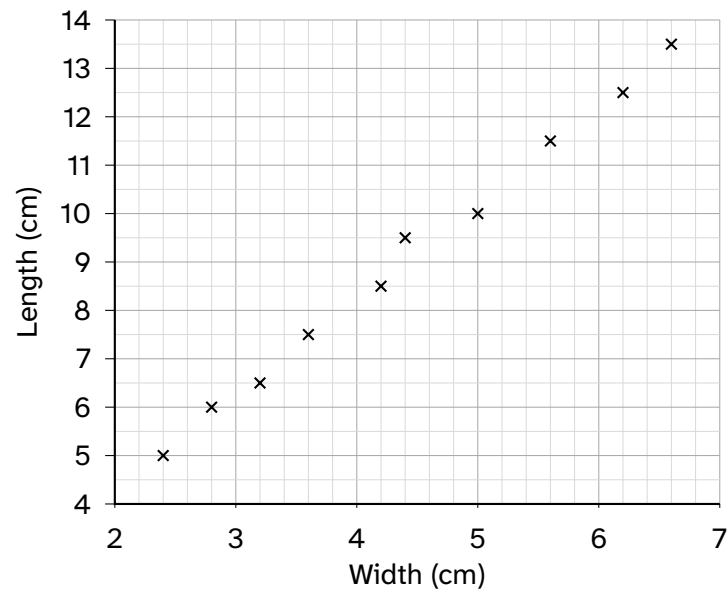
(2)

(Total for Question 2 is 4 marks)

- 3** Emma measures the width and the length of some leaves from a tree. The scatter graph below shows information about her results. The table shows the width and the length of two more leaves.

	Leaf <i>P</i>	Leaf <i>Q</i>
Width (cm)	3.8	5.4
Length (cm)	8.5	10.5

- (a) On the scatter graph, plot the information for leaf *P* and leaf *Q*.



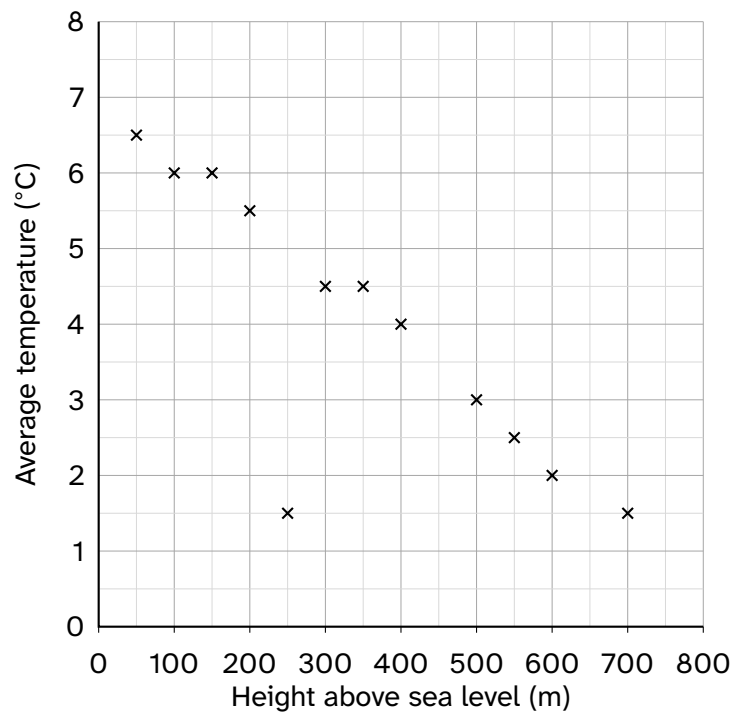
(1)

- (b) Another leaf from the same tree has a length of 12 cm. Estimate the width of this leaf.

..... cm
(2)

(Total for Question 3 is 3 marks)

- 4 The scatter graph shows information about 12 villages.
It shows the height above sea level of each village and the average temperature in the village in January.



- (a) One of the points is an outlier.
Write down the coordinates of this point.

(..... ,)
(1)

- (b) Ignoring the outlier, describe the relationship between the height above sea level and the average temperature in January.

(1)

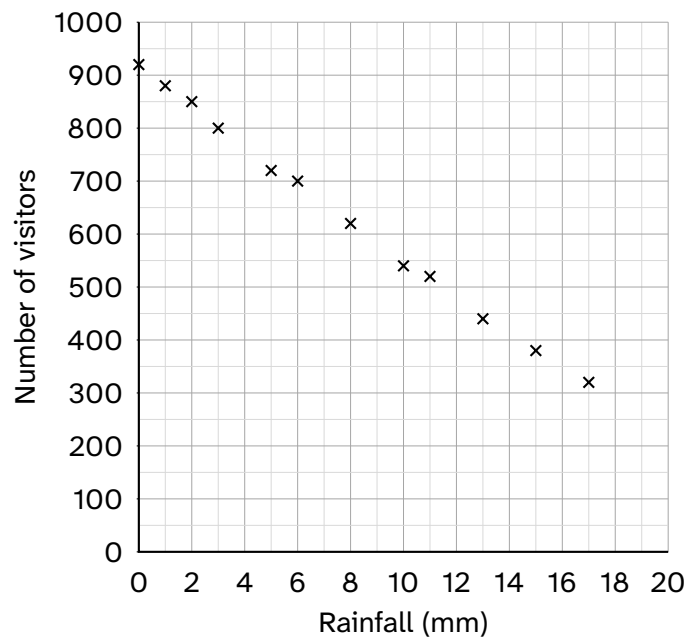
- (c) Another village is 450 m above sea level.
Estimate the average temperature in January in this village.

..... °C
(2)

- (d) Karim says,
 "The outlier must be a mistake, so it should be crossed out."
Is Karim right?
Give a reason for your answer.

(1)
(Total for Question 4 is 5 marks)

- 5 The scatter graph shows the rainfall and the number of visitors to a zoo on each of 12 days.



- (a) Write down the type of correlation.

.....
(1)

- (b) The zoo manager wants to use the scatter graph to estimate the number of visitors on a day with 40 mm of rain.
Explain why this estimate may not be reliable.

.....
.....
(1)

- (c) The manager says,
 "The scatter graph proves that rain makes people stay away from the zoo."
Is the manager right?
Give a reason for your answer.

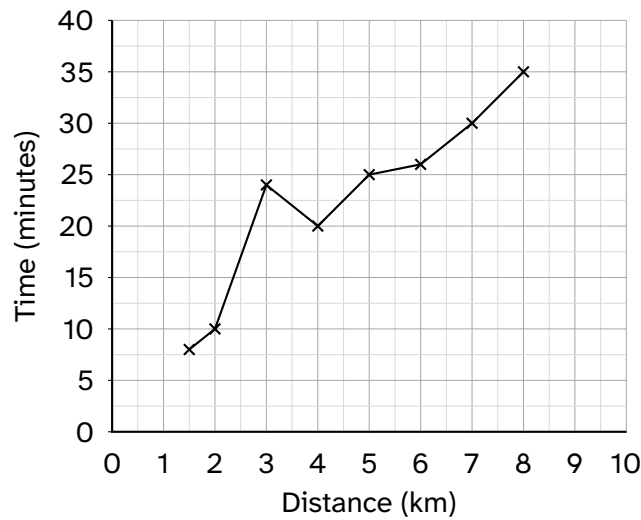
(1)

(Total for Question 5 is 3 marks)

- 6 Mia asks eight students how far they live from school and how long it takes them to get to school.
The table shows her results.

Student	A	B	C	D	E	F	G	H
Distance (km)	1.5	2	3	4	5	6	7	8
Time (minutes)	8	10	14	20	25	26	30	35

Mia draws a scatter graph for this information.
Here is her answer.

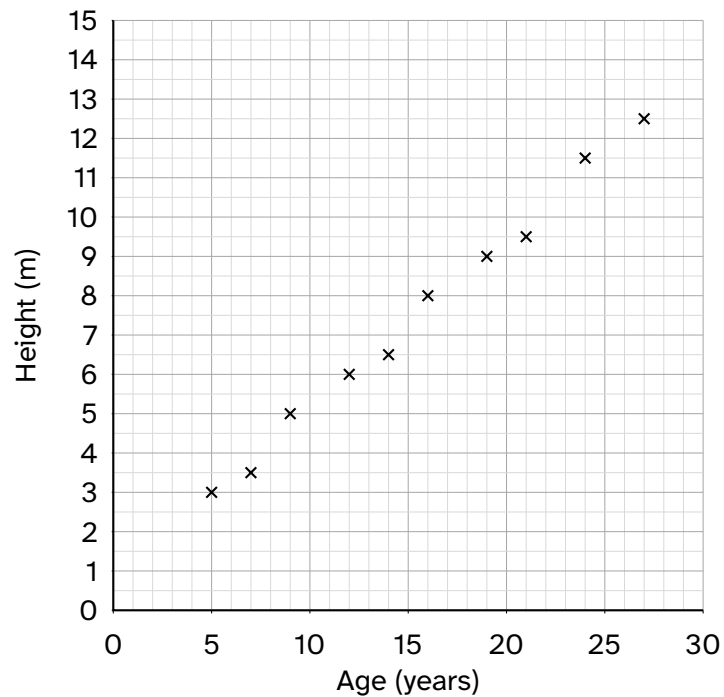


Write down **two** mistakes Mia has made.

(2)

(Total for Question 6 is 2 marks)

- 7 The scatter graph shows the age and the height of 10 trees of the same type in a park.



- (a) Josh says,
“On average, these trees grow 1 metre taller each year.”
 Is Josh right?
 Show how you get your answer.

(3)

- (b) Another tree of the same type is 12 years old.
 Use a line of best fit to estimate its height.

..... m
 (1)
(Total for Question 7 is 4 marks)